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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/975,525

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EXAMINER

DINH, TAN X

ART UNIT

PAPER NUMBER

2653

DATE MAILED: 03/16/2004

*4*

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/975,525

Applicant(s)

KAWAGUCHI ET AL.

Examiner

TAN X. DINH

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7, 8, 16 and 17 is/are allowed.
- 6) ☒ Claim(s) 11-13, 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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1) The amendment and the Verified Translation of priority document JP 2000 310394 filed 12/26/2003 is acknowledged. Claims *1-6,9,10,14,17 and 18* have been canceled.

2) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3) This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4) Claims *11-13 and 15* are rejected under 35 U.S.C. 103(a) as being unpatentable over NISHIKIORI et al (6,018,511).

NISHIKIORI et al discloses a magneto-optical recording medium as claimed in claim 11, comprising a first magnetic layer of Curie

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temperature  $T_{c1}$  ( Figs.7A & 7B, 203. See also Column 4, lines 61-65 ), a second magnetic layer interpose between first and a third magnetic layer and having Curie temperature  $T_{c2}$  lower than Curie temperature  $T_{c1}$  of first magnetic layer and Curie temperature  $T_{c3}$  of third magnetic layer ( Fig.7A & 7B, 204. See also Column 5, lines 4-21. ), a third magnetic layer of Curie temperature  $T_{c3}$  ( Figs.7A & 7B, 205. See column 4, lines 61-65, See also column 5, lines 22-27 for  $T_{c1} > T_{c2} < T_{c3}$  );

wherein at least a part of temperature range lower than the Curie temperature  $T_{c2}$ , the first magnetic layer is exchange-coupled with second magnetic layer so as to be perpendicularly magnetized and a magnetization of the third magnetic layer is transferred to the first magnetic layer via second magnetic layer due to the exchange coupling ( Figs.7A & 7B, at overlap portion between intermediate temperature 212 and low temperature 211, the exchange-coupled between first magnetic layer 203 and second magnetic layer 204 occurs as perpendicular magnetized direction ( small arrow from in-plane direction turns into perpendicular direction ) and the magnetic domain from third magnetic layer is transferred to first magnetic layer ( the perpendicular arrow at first magnetic layer ). It is noted that, the intermediate temperature 212 and temperature  $T_{sw1}$  are lower than Curie temperature  $T_{c2}$  of second magnetic layer 204. See column 13, lines 42-51 );

wherein the second magnetic layer is in-plane magnetization state at room temperature ( Figs.7A & 7B, in-plane direction of

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layer 204 ), and makes transition to perpendicular magnetization state in a temperature range from a critical temperature  $T_{cR}$  that is higher than room temperature to the Curie temperature (column 13, lines 45-51. In this case, the temperature  $T_{sw1}$  is critical temperature which higher than room temperature and lower than Curie temperature  $T_{c2}$  of second magnetic layer ), *except* to specifically show a non-magnetic layer between second and third magnetic layers. However, to place a non-magnetic layer between second and third magnetic layers is old and well know in magneto-optical recording medium art, evidence at NISHIKIORI et al's figure 1B, the magneto-optical recording medium 60 includes a non-magnetic layer 64 for enhancing the transfer of magnetic domain from recording layer 65 to reproducing layer 63. Therefore, to include a non-magnetic layer between second and third magnetic layers as claimed is deem obvious to someone within the level of skill in the art.

As to claim 12, it would have been obvious matter of design choice to modify the NISHIKIORI et al's magneto-optical recording medium by having the non-magnetic layer of thickness 1nm - 10nm, since applicant has not disclosed that having the non-magnetic layer at this specific thickness ranges could solve any stated problem or is for any particular purpose and it appears that the magneto-optical recording medium would perform equally well with the non-magnetic layer at any specific thicknesses.

Claim 13 adds the feature of first magnetic layer (

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reproducing layer ) is in-plane magnetization states at room temperature which is suggests in NISHIKIORI et al's figure 2B, the first magnetic layer ( or reproducing layer ) 83 is in-plane magnetization states at room temperature and changes to perpendicular magnetization states at reproducing temperature 90 ( see column 3, lines 40-58 ).

As to claim 15, it would have been obvious to modify the first magnetic layer ( or reproducing layer ) of NISHIKIORI et al's by at least two magnetic layers because: during reproducing process, the recorded magnetic domain from recording layer ( third magnetic layer ) is transferred to first magnetic layer ( or reproducing layer ) depends on Kerr rotation angle, and a small Kerr rotation angle leads to a decrease in a carrier value of signals and low in amplitude, by using multiple first magnetic layer ( or reproducing layer ) the amplitude can be amplified and correctly reproduce. Thus, to use a multiple first magnetic layer ( or reproducing layer ) in NISHIKIORI et al's magneto-optical recording medium for amplifying the amplitude during reproducing process is deem obvious to someone within the level of skill in the art.

5) Claims *7,8,16 and 17* are allowed.

6) Applicant's arguments with respect to claims *1-18* have been considered but are moot in view of the new ground(s) of rejection.

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7) Any inquiry concerning this communication or earlier communications from the examiner should be directed to TAN X. DINH whose telephone number is (703) 308-4859. The examiner can normally be reached on Monday - Friday, 8:00AM - 5:30PM.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).



**TAN DINH**  
**PRIMARY EXAMINER**

March 15, 2004